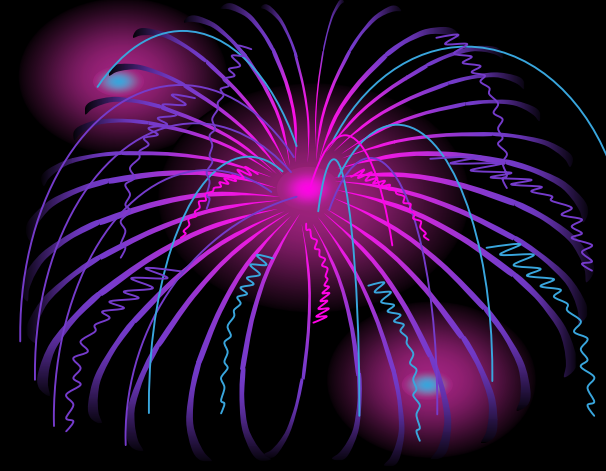


INFOBATT 2006



The IEEE Standards Association Stationary Batteries Committee

Bart Cotton,
Senior Member, IEEE
IEEE Standards Association, PES, Stationary Batteries
Chairman, Working Group – IEEE 1491 - 2005
(Guide for Selection and Use of Battery Monitoring Equipment
in Stationary Applications)
Founder, DATA POWER MONITORING CORPORATION
cbartcotton@ieee.org bcotton@dpmc.com

Power Engineering Society Stationary Battery Committee



- This Committee is dedicated to the advancement of user knowledge in the application and operation of all stationary battery systems.
- Our tools in this work are battery standards, technical sessions, and conference sponsorship.

Maintained Documents:



- IEEE 450-2002 - Vented Lead-Acid Maintenance & Testing
- IEEE 484-2002 - Vented Lead-Acid Battery Installation
- IEEE 485-R2003 - Vented Lead-Acid Battery Sizing
- IEEE 535-R1994 - Nuclear Battery Qualification
- IEEE 1106-1995 - Ni-Cd Installation, Maint. & Testing
- IEEE 1115-2000 - Ni-Cd Battery Sizing
- IEEE 1184-1994 - UPS Batteries
- IEEE 1187-2002 - VRLA Installation
- IEEE 1188-1996 - VRLA Maintenance & Testing
- IEEE 1189-1996 - VRLA Battery Selection
- IEEE 1375-R2004 - Battery Protection
- IEEE 1491-2005 - Battery Monitoring
- IEEE 1625-2004 - Battery; Portable Computing
- IEEE 1725-2005 - Cell Phone Batteries

In addition, the following are
new open projects:



- PAR 1578 - Battery Spill Containment
- PAR 1635 - Battery Ventilation & Thermal Management
- PAR 1657 - Battery Technician Qualification
- PAR 1660 - Application & Management of Stationary Batteries used in Cycling Service
- PAR 1679 - Recommended Practice for the Characterization and Evaluation of Emerging Battery Technologies in Stationary Applications

STATIONARY BATTERY COMMITTEE SCOPE



Stationary Battery Committee scope:

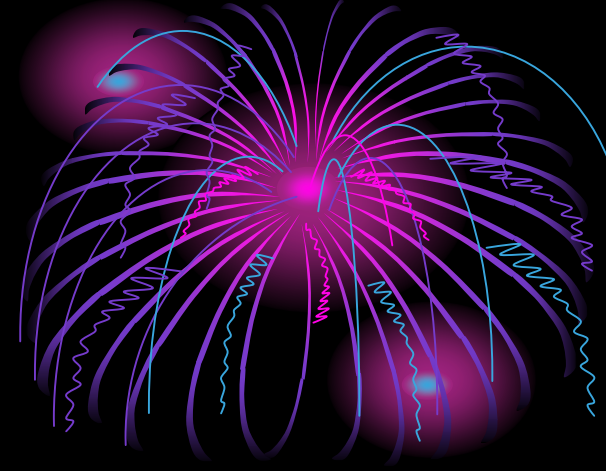
- Storage batteries and associated dc systems used in stationary applications.
- Sponsorship and development with other technical committees and/or organizations.
- Liaison and cooperation with other technical committees, societies, groups and associations.

STATIONARY BATTERY COMMITTEE RESPONSIBILITIES



The responsibilities and duties of the Committee shall include the following:

- Promote and coordinate activities in its field.
- Sponsor technical sessions.
- initiate and prepare standards.
- Arrange Special Technical Conferences.
- Review and grade technical papers.
- Initiate, propose and/or process awards .
- Offer cooperation with local sections/chapters.
- Select session Chairs and be responsible for presentation of papers at meetings.
- Inform the general membership of Committee activities.
- Encourage all who are qualified to seek membership in the Power Engineering Society and the Stationary Battery Committee.



STANDARDS

Maintenance and Development

IEEE 450-2002 - Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications



- This Standard is currently under revision.
- This recommended practice is applicable to full-float stationary applications where a battery charger normally maintains the battery fully charged and provides the dc loads.
- It also applies to UPS applications.

IEEE 484-2002 – Recommended Practice for Installation Design and Installation of Vented Lead-Acid Batteries for Stationary Applications



- These recommended practices are applicable to all stationary applications.
- Provides recommended design practices and procedures for storage, location, mounting, ventilation, instrumentation, preassembly, assembly, and charging of vented lead-acid batteries.

IEEE 485-2003 - Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications



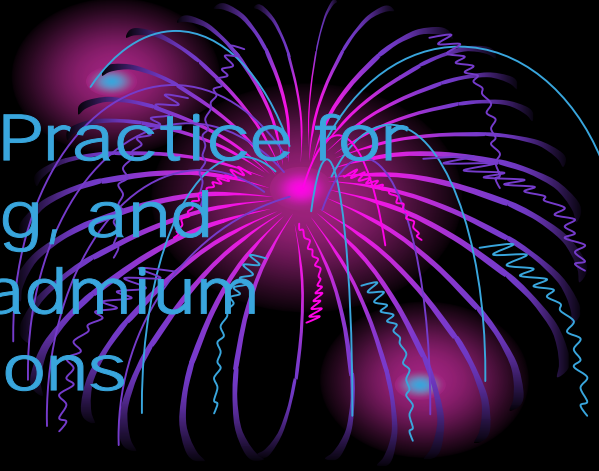
- This recommended practice describes methods for defining the dc load and for sizing a lead-acid battery to supply that load for stationary battery applications in full float operations.

IEEE 535 - 1994 - Standard for Qualification of Class 1E Lead Storage Batteries for Nuclear Power Generating Stations



- This document describes qualification methods for Class 1E lead storage batteries and racks to be used in nuclear power generating stations outside of primary containment.

IEEE 1106-1995 - Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications



- This recommended practice involves maintenance, test schedules, procedures and replacement criteria that can be used to optimize the life and performance of vented Nickel-Cadmium batteries for stationary applications.
- 2005 update included use of rate-adjusted capacity calculation method.

IEEE 1115-2000 - Recommended Practice for Sizing Nickel-Cadmium Batteries for Stationary Applications



- This recommended practice describes methods for defining the dc load and for sizing a NiCd battery to supply that load.
- Recommended practice reaffirmed in 2005.
- An amendment is underway to take cycling applications into account.

IEEE 1184-2006 - Guide for Batteries for Uninterruptible Power Supply Systems



- This Guide Standard was recently revised, released, and is currently in force.
- The guide discusses various battery systems so that the user can make informed decisions on selection, installation design, installation, maintenance, and testing of batteries used in Uninterruptible Power Supply (UPS) Systems.

IEEE 1187-2002 - Recommended Practice for Installation Design and Installation of Valve Regulated Lead-Acid Storage Batteries for Stationary Applications




- IEEE 1187 is a recommended practice that provides guidance for the installation and installation design of valve-regulated lead acid (VRLA) batteries.
- Document update due to begin in 2007 to align document with IEEE 1188-2005, IEEE 1184-2006 and changes in industry best practices.

IEEE 1188-2005 - Recommended Practice for Maintenance, Testing, and Replacement of Valve-Regulated Lead-Acid (VRLA) Batteries for Stationary Applications



- This Standard was recently revised, and is currently in force.
- This recommended practice is limited to maintenance, test schedules, and testing procedures that can be used to optimize the life and performance of valve-regulated lead-acid (VRLA) batteries for stationary applications.
- It also provides guidance to determine when batteries should be replaced.



IEEE 1189-1996 - Guide for Selection of Valve-Regulated Lead-Acid (VRLA) Batteries for Stationary Applications

- This guide describes methods for selecting the appropriate type of valve-regulated, immobilized-electrolyte, recombinant lead-acid battery for any of a variety of potential stationary float applications.

IEEE 1375-2004 - Guide for the Protection of Stationary Battery Systems

- This provides guidance in the protection of stationary battery systems. It includes the battery and dc components to and including the first protective device downstream of the battery terminals.
- This guide provides discussions and recommendations regarding the forms of stationary battery protection as well as characteristics, of protective devices used in dc circuits.
- Both grounded and ungrounded dc battery systems are used widely in different industry applications.



IEEE 1491-2005 - Guide for Selection and Use of Battery Monitoring Equipment in Stationary Applications



- This is a new standard, and is currently in force.
- This Guide is currently under revision to align with current technology and crosses all other battery standards.
- It discusses operational parameters that may be observed by battery monitoring equipment used in stationary applications, and the relative value of such observations.
- it provides a means for establishing specifications for the desired parameters to be monitored.

IEEE 1625-2004 - Standard for Rechargeable Batteries for Portable Computing



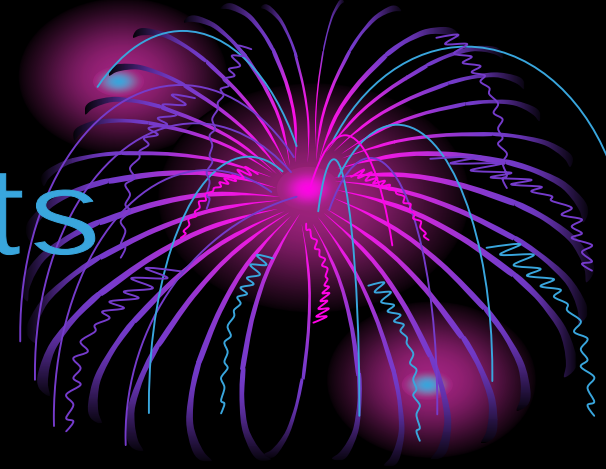
- This is a corporate developed standard, and is currently in force.
- The standard is based on the collective experience of leading manufacturers of mobile computer cells, packs and mobile computer systems.
- It was developed within the IEEE Corporate Standards Program.

IEEE 1725-2005 - Standard for Rechargeable Batteries for Cellular Telephones



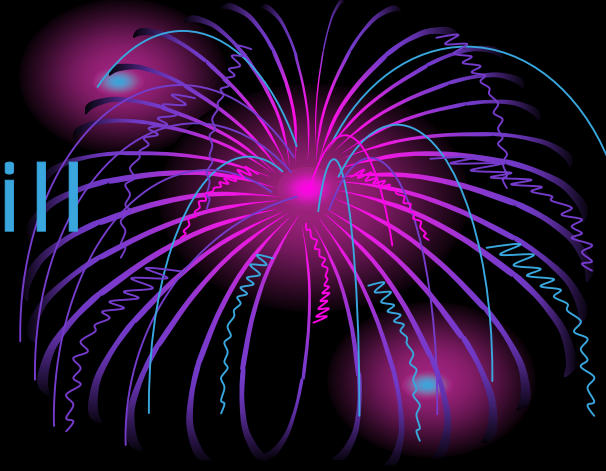
- This is a corporate developed standard, and is currently in force.
- The standard includes cell and battery pack construction, chemistries, charge and discharge controls, packaging technologies, and other areas.
- It was developed within the IEEE Corporate Standards Program by companies that manufacture battery cells, battery packs and cell phones.

Open Projects



- The Stationary Battery Committee is currently generating new Standards and Guides which will enhance our understanding of batteries, their applications, and appropriate relationships.
- These open projects are described below and are defined by "PAR" (Project Authorization Request).

PAR 1578 - Battery Spill Containment



- This guide discusses factors relating to electrolyte spill containment for VLA, VRLA, and Ni-Cd stationary batteries.
- It is intended to assist code-writing organizations. It describes spill containment and management issues related to stationary battery systems.

PAR 1657 - Guide for Personnel Qualifications for Installation, Maintenance, and Operation of Stationary Batteries



- We recognize that specific training on battery system installation and maintenance is necessary.
- We also recognize that existing training of battery maintenance and installation technicians is generally non-existent, or at the least, non-standard.
- This subcommittee is writing this guide for training, which will specify the types of knowledge a battery installation or maintenance technician must possess.

PAR 1635 - Guide for the Ventilation and Thermal Management of Batteries for Stationary Applications



- This guide is a joint project between the IEEE and the American Society of Heating, Refrigeration and Air Conditioning Engineers Inc. (ASHRAE). It covers flooded lead-acid, VRLA and flooded Ni-Cd battery systems.
- Ventilation of stationary battery installations is critical to maximize battery life while minimizing hazards. This guide is being written to serve as a bridge between the electrical designer and the HVAC designer.

PAR 1660 - Application & Management of Stationary Batteries used in Cycling Service



- This project deals with all aspects of design, application, and maintenance of lead-acid batteries in cycling service.
- It provides additional guidance on use of alternative battery technologies.

PAR 1679 - Recommended Practice for the Characterization and Evaluation of Emerging Energy Storage Technologies in Stationary Applications



- Scope was recently expanded from just batteries to all energy storage technologies
- This document covers an objective evaluation of emerging energy storage technologies by a potential user for any stationary application.
- Technologies are those that provide a means for the reversible storage of electrical energy,
- The medium may be electrochemical, kinetic, electrostatic, thermal, or etc.
- Stationary applications include both standby and cycling operation.
- This recommended practice will describe a format for the characterization of emerging energy storage technologies.

CONCLUSIONS



- The Stationary Battery Committee meets every six months, and its membership consists of IEEE members and IEEE Standards association members.
- Meetings are open to all, and we encourage all persons of interest to become involved in this organization.
- There is a need to increase membership within this Committee, due to the quantity and depth of IEEE standards involved with the Stationary Battery industry.